

REMARKS

As an initial matter, Applicant would like to thank the Examiner for indicating allowable subject matter in claim 7. Applicant also thanks the Examiner for acknowledging Applicant's claim for foreign priority and receipt of the foreign priority document, and considering all of the documents cited in the Information Disclosure Statement filed February 23, 2004.

Claims 1-12 are pending in the application. Claims 1-3 have been amended, claim 8 has been canceled, and claims 11-13 are newly added. Reconsideration of the rejection and allowance of the pending application in view of the following remarks are respectfully requested.

The present invention relates to a surveying instrument. In one embodiment of the invention, the surveying instrument includes, inter alia, a surveying instrument body, and first and second collimator optical systems positioned in the surveying instrument body to collimate the surveying instrument relative to a survey point. The first and second collimator optical systems each include a separate light source for projecting light rays toward the survey point to collimate the surveying instrument relative to the survey point (claim 1).

In another embodiment of the invention, the surveying instrument includes, inter alia, a collimator optical system which includes a zoom mechanism for varying the focal length of the collimator optical system between that of a wide-angle view and that of a

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telephoto view (claim 2).

In another embodiment of the invention, the surveying instrument includes, inter alia, a surveying instrument body, a telescope optical system positioned in the surveying instrument body, and a collimator optical system positioned in the surveying instrument body. The collimator optical system and the telescope optical system each include a separate light source for projecting light rays toward a survey point to collimate the surveying instrument relative to the survey point (claim 3).

In another embodiment, the surveying instrument also includes a target recognition processing circuit for determining whether a survey point is within a field of view of a first collimator optical system. The first collimator optical system automatically performs a first collimating operation when the target recognition processing circuit determines that a survey point is within the field of view of the first collimator optical system (claim 11).

In another embodiment, the surveying instrument includes, inter alia, a first collimator optical system including a first lens having a first optical axis, and a second collimator optical system including a second lens having a second optical axis. The surveying instrument also includes an image sensor which captures images from the first and second collimator optical systems (claim 13).

In the Office Action of October 6, 2004, the Examiner objected to the specification, stating that the Abstract, page 2, line 15 of the specification, and claim 1 appear to contradict other parts of the specification relating to whether the first collimator

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operation is performed before, or after, the second collimator, or telescope operations.

Applicant has amended the Abstract, page 2, line 15 of the specification, and claim 1 to ensure consistency and accuracy, and respectfully requests withdrawal of the objection.

In the Office Action, the Examiner rejected claims 1, 2, 4, 5 and 8 under 35 U.S.C. §102(e) as being anticipated by Shimoyama et al. (U.S. Patent Publication No. 2003/0048355). Applicant respectfully traverses the rejection for at least the following reasons.

Shimoyama relates to an automatic collimation surveying apparatus. The surveying apparatus includes a wide-angle camera optical system 89 which functions as a pick-up device for picking up an object to be measured, and a collimation camera optical system 47 which functions as a pick-up device for picking up an object to be measured at a high magnification ratio. See paragraph 39 on page 3. The collimation camera optical system 47 includes a light source 80 which provides illumination light for the collimation camera optical system 47 and the wide-angle camera optical system 89. See paragraphs 46 and 47 on page 4.

In the Office Action, the Examiner asserted that Shinoyama's light receiving element 86 corresponds to the light source of the second collimator optical system previously recited in claim 8. Applicant respectfully disagrees.

Shinoyama discloses, in paragraph 48 on page 4, that the surveying apparatus includes a light emitting element 74 which emits a distance measurement light that is

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transmitted to a target to be measured. The measurement light is used to perform a distance measurement, not a collimation operation. The target reflects the light to a light receiving element 86, and a distance measurement is then calculated. The light receiving element does not project light rays toward the target for collimating the surveying apparatus.

Thus, Applicant respectfully submits that Shinoyama fails to disclose a surveying instrument including first and second collimator optical systems, where the first and second collimator optical systems each include a separate light source for projecting light rays toward a survey point to collimate the surveying instrument relative to the survey point, as recited in claim 1. Shinoyama also fails to disclose a surveying instrument including a telescope optical system and a collimator optical system, where the telescope optical system and the collimator optical systems each include a separate light source for projecting light rays toward a survey point to collimate the surveying instrument relative to the survey point, as recited in claim 3. For at least these reasons, Applicant respectfully submits that the rejection of claims 1 and 3 is improper, and requests withdrawal thereof.

Dependent claims 4-10 are also submitted to be in condition for allowance, at least in view of their dependence on claim 1.

In regards to claim 2, Shinoyama discloses that the wide-angle camera optical system 89 includes a zooming unit which has a focusing lens 19' and a zooming type

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auto-focusing mechanism for adjusting a distance of a target. See paragraph 44 on page

3. However, Shinoyama does not disclose that the zooming unit varies a focal length of the wide-angle camera optical system 89 to that of a telephoto view. Instead, Shinoyama utilizes the collimation camera optical system 47 to pick up objects to be measured at a high magnification ratio. See paragraph 39 on page 3.

Thus, Applicant respectfully submits that Shinoyama fails to disclose a surveying instrument which includes a collimator optical system including a zoom mechanism for varying a focal length of the collimator optical system between that of a wide-angle view and that of a telephoto view, as recited in claim 2. For at least this reason, Applicant respectfully submits that the rejection of claim 2 is improper, and requests withdrawal thereof.

In the Office Action, the Examiner also rejected claims 1, 4 and 5 under 35 U.S.C. § 102(e) as being anticipated by Ohtono et al. (U.S. Patent Publication No. 2003/0179361). Applicant respectfully submits that Ohtono is not a valid prior art reference because its filing date (March 13, 2003) is later than the effective filing date of Applicant's present application (October 25, 2002, the filing date of Applicant's foreign priority document, Japanese Application No. 2002-310456). For at least this reason, Applicant submits that the rejection is improper and requests withdrawal thereof.

The Examiner also utilized Ohtono to reject claims 2, 3, 6 and 8-10 under 35 U.S.C. § 103(a). Applicant submits that these rejections are improper as well, at least

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because Ohtono is not a valid prior art reference.

The Examiner also rejected claims 1-6 and 8-10 under 35 U.S.C. § 103(a) as being unpatentable over Donath et al. (U.S. Patent No. 6,487,011) in view of Hinderling (U.S. Patent NO. 6,504,602). Applicant respectfully traverse the rejection for at least the following reasons.

Donath is directed to a telescope for geodetic instruments. The telescope includes a beam path for target seeking (or image detection), and a wide-angle beam path. See col. 3, lines 48-52. The telescope only includes a single light source 7, for distance measurement. See col. 3, lines 21-23 and Figure 1.

In the Office Action, the Examiner admitted that Donath's telescope does not include a light source for a first collimator optical system and a light source for a second collimator optical system. However, the Examiner asserted that Hinderling discloses a surveying instrument including various optical systems, including target seeking and auto-focus, which can each employ separate light sources (lambda's 1-4).

Hinderling is directed to a tacheometer telescope. Although Hinderling's telescope includes multiple beam transmitters S1-S3, Hinderling's telescope does not include multiple collimator optical systems, and thus does not include a first collimator optical system having a first light source and a second collimator optical system having a second light source.

Furthermore, even if Hinderling does disclose the use of multiple collimator

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optical systems, each having their own light source, there would be no motivation to modify Donath's telescope to provide an additional light source because Donath's beam path for target seeking (which includes components 1, 2, 10.1, 15 and 4), and Donath's wide-angle beam path (which includes components 1, 11, 10.2, 15 and 4) share a common optical axis 3 for projecting light on a target.

Thus, the combination of Donath and Hinderling fails to disclose or suggest a surveying instrument including first and second collimator optical system, each including a separate light source for projecting light rays toward a survey point to collimate the surveying instrument relative to the survey point, as recited in claim 1. The combination also fails to disclose or suggest a surveying instrument including a telescope optical system and a collimator optical system, each including a separate light source for projecting light rays toward a survey point to collimate the surveying instrument relative to the survey point, as recited in claim 3. For at least this reasons, Applicant respectfully submits that the rejection of claims 1 and 3 is improper, and requests withdrawal thereof.

Dependent claims 4-10 are also submitted to be in condition for allowance, at least in view of their dependence on claim 1.

Regarding claim 2, Donath's telescope does not include a zoom mechanism for varying a focal length of the collimator optical system. The Examiner recognized this in the Office Action, but asserted that Hinderling's surveying instrument includes a zoom mechanism (22), and further asserted that it would have been obvious to modify Donath

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in view of Hinderling to include a zoom mechanism for varying a focal length in order to provide a well defined image to the sensors and the telescope optical system when desired.

Hinderling discloses, in col. 7, lines 8-11, that his telescope includes a focusing unit 22 for projecting a well defined image of a target object 16 on a sensor surface 21. However, Hinderling's focusing unit does not vary a focal length of a collimator optical system between that of a wide-angle view and that of a telephoto view.

Thus, Applicant respectfully submits that the combination of the Donath and Hinderling references fails to disclose or suggest a surveying instrument including a collimator optical system which includes a zoom mechanism for varying a focal length of the collimator optical system between that of a wide-angle view and that of a telephoto view, as recited in claim 2. For at least this reason, Applicant respectfully submits that the rejection of claim 2 is improper, and requests withdrawal thereof.

Newly added claim 11 recites a surveying instrument which includes, inter alia, a target recognition processing circuit for determining whether a survey point is within a field of view of a first collimator optical system, where the first collimator optical system automatically performs a first collimating operation when the target recognition processing circuit determines that a survey point is within the field of view of the first collimator optical system. Applicant respectfully submits that the Shinoyama, Donath and Hinderling references fail to disclose or suggest this combination of features.

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Newly added dependent claim 12 is also submitted to be in condition for allowance at least in view of its dependence on claim 11.

Newly added claim 13 recites a surveying instrument which includes, inter alia, a first collimator optical system including a first lens having a first optical axis, a second collimator optical system including a second lens having a second optical axis different than the first optical axis, and an image sensor which captures images from the first and second collimator optical systems. Applicant respectfully submits that the Shinoyama, Donath and Hinderling references fail to disclose or suggest this combination of features as well.

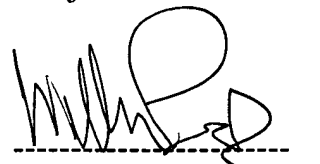
Based on the above, it is respectfully submitted that this application is now in condition for allowance, and a Notice of Allowance is respectfully requested.

SUMMARY AND CONCLUSION

Entry and consideration of the present amendment, reconsideration of the outstanding Office Action, and allowance of the present application and all of the claims therein are respectfully requested and now believed to be appropriate. Applicant has made a sincere effort to place the present invention in condition for allowance and believes that he has now done so.

Should the Examiner have any questions or comments regarding this response, or the present application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
Kenji KANEKO

A handwritten signature in black ink, appearing to read 'William Pieprz', is written over a horizontal dashed line.

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